

REMARKS/ARGUMENTS

The Office is respectfully informed that the present Office Action was sent to the wrong address. In the "Response to Notice To File Missing Parts of Provisional Application" submitted to the Office on December 15, 2004 with regard to the present application, the Office was informed that applicant's representative, Mark A. Farley, Esq. (Reg. No. 33,170) had moved to a new firm, and thus that this file had been transferred to the new firm, i.e., Ostrolenk, Faber, Gerb & Soffen, LLP at 1180 Avenue of the Americas, New York, NY 10026-8403 ((212) 382-0700). This contact information was, additionally, set forth on the executed Declaration and Power of Attorney filed by the applicant in response to the Missing Parts notice. In the Missing Parts response filed by applicant, the Office was requested to send all communications regarding this application to applicant's representative, Mark A. Farley, Esq. (Reg. No. 33,170) at the Ostrolenk, Faber firm (see address above). Nevertheless, the Office Action was mailed to the wrong address, i.e, the Cooper & Dunham law firm where applicant's representative previously practiced. The Office is, therefore, respectfully requested to correct its records concerning this application such that all future communications are mailed to applicant's representative at Ostrolenk, Faber, Gerb & Soffen, LLP at the address given above.

Claims 1-13 are pending in this application. In response to the Office Action dated July 27, 2005, nos. 1-13 are canceled without prejudice or disclaimer to applicant's right to pursue patent protection for the subject matter thereof in this or a subsequent application. These previously-pending claims have been replaced with new claims 14-16. As to these new claims, claim 14 essentially includes all of the features of originally filed claims 1-5; claim 15 corresponds to original claim 7; and claim 16 recites all of the features contained in original claims 8-12.. New claims 14-16 are thus completely supported by the application as originally filed and thus they raise no issue of new matter. Entry of this Amendment and the new claims into the file of the present application is respectfully solicited. Upon such entry of this Amendment, claims 14-16 will be pending in the application.

DRAWING OBJECTIONS

The Office Action includes, as an Attachment, a Form PTO-948 entitled, "Notice of Draftsperson's Patent Drawing Review", which identifies several objections to the drawings filed with this application.

Submitted herewith, therefore, are three (3) sheets of formal drawings which are believed to overcome the objections set forth in the Draftsperson's Notice. Entry of these formal drawings into the file of the application is respectfully requested.

AMENDMENT TO THE SPECIFICATION

In ¶6 on p. 3, the Office Action states that the title of the invention is not descriptive and that a new title is required that is clearly indicative of the invention to which the claims are directed.

In response, applicant has amended the title of this application from "System For Driving a Rotatable Machine" to - - Rotatable Machine or Centrifuge With Driving Motors In a Single Casing - -. As amended, the new title is believed to overcome the Examiner's objection.

CLAIM REJECTIONS

The claims are rejected over a variety of references for both anticipation under §102(b) and obviousness under §103(a). These rejections may be briefly summarized as follows:

Anticipation Rejections Under 35 U.S.C. §102(b)

1. Claims 1, 5, 6/1, 7, 8, 12 and 13/8 over USP 4,369,915 to Oberg et al.
2. Claims 1, 3/1, 7, 8 and 10/8 over USP 3,923,241 to Cyphelly
3. Claims 1, 3/1, 5, 7, 8, 10/8, 11 and 12 over USP 4,120,447 to Jaeger
4. Claims 1, 3/1, 5, 7, 8, 10/8 and 12 over 5,037,372 to Weder
5. Claims 1, 2, 5 and 6 over German Reference 3325566 A1.

Obviousness Rejections Under 35 U.S.C. §103(a)

1. Claims 2, 6/2, 9 and 13/9 over USP 4,369,915 in view of USP 6,100,618 to Schoeb et al.
2. Claims 2, 3/2, 6/2, 9 and 10 over USP 3,923,241 in view of USP 6,100,618
3. Claims 2, 3/2, 4/3, 9 and 10/9 over USP 4,120,447 in view of USP 6,100,618
4. Claims 2, 3/2, 9 and 10/9 over USP 5,037,372 in view of USP 6,100,618

In response to these claim rejections, all of the originally pending claims, nos. 1-13 have been canceled (without prejudice or disclaimer) and replaced by new claims 14-16. These new claims, which are

essentially combinations of a number of the previously pending claims, are believed to more clearly distinguish applicant's invention over the prior art in that they recite component features not taught by the cited art.

Prior to discussing the features which distinguish applicant's invention from the prior art, however, a brief, non-limiting review of what applicant considers to be his invention is believed to be in order. It is believed that this explanation will serve to highlight for the Examiner, in the discussion which follows, those aspects of applicant's invention which distinguish it from the prior art.

In a first embodiment as described, e.g., in applicant's new claim 14, the invention is directed to a rotatable machine (1) having first and second ends. The machine (1) comprises a chamber (2) and a shaft (3). Shaft (3) is mounted in chamber (2) such that, upon rotation of the shaft (3) and the chamber (2), the shaft (3) and the chamber (2) each rotate about the same axis (4). Machine (1) further comprises a first motor (20) for driving the chamber (2) and a second motor (30) for driving the shaft (3), wherein each motor (20, 30) has an axis, and wherein the axes of the first and second motors (20, 30) and the axis (4) of rotation of the chamber (2) and the shaft (3) are coincident, the first motor (20) and the second motor (30) are both permanent-magnet synchronous motors comprising permanent magnets (22, 32), wherein the first and second motors (20, 30) are both located at the same end of the machine (1). The rotatable machine (1) further comprises a casing (50) containing both the first and the second motors (20, 30) and first and second shafts (10, 11) adapted for driving the chamber (2) and the shaft (3), respectively, wherein the shafts (10, 11) are concentric and are push-fitted directly into corresponding rotors (21, 31) of the respective motors (20, 30).

New independent claims 16 is, therefore, directed to the particular embodiment of the invention wherein the rotatable machine is a centrifuge. As recited by the claim, the invention is directed to a centrifuge (1) having first and second ends. The centrifuge (1) comprises a bowl (2) and an endless screw (3), with the endless screw (3) being mounted in the bowl (2) such that, upon rotation of the bowl (2) and the endless screw (3), the endless screw (3) and the bowl (2) each rotate about the same axis (4). Centrifuge (1) further comprises a first motor (20) for driving the bowl (2) and a second motor (30) for driving the endless screw (3). Each motor (20, 30) has an axis, wherein the axes of the first and second motors (20, 30) and the axis (4) of rotation of the bowl (2) and of the endless screw (3) are coincident, and wherein the first motor (20) and the second motor (30) are each permanent-magnet synchronous motors comprising permanent magnets (22, 32). The first and the second motors (20, 30) are both located at the same end of

the centrifuge (1). The centrifuge further comprises a casing (50) containing both the first and second motors (20, 30) and first and second shafts (10, 11) adapted for driving the bowl (2) and the endless screw (3), respectively, wherein the shafts (10, 11) are concentric and are push-fitted directly into corresponding rotors (21, 31) of the respective motors (20, 30).

The invention as presently claimed is believed to be distinguishable over the prior art cited to reject applicant's original claims for the reasons which follow.

Discussion of Anticipation Rejections Under 35 U.S.C. §102(b)

The Oberg, et al. '915 patent appears to disclose a rotatable machine wherein the axes of the drive motors (12, 17) for the chamber (10) and the shaft (11) are coincident, with the motors being arranged at each end of the machine. It is not entirely clear, however, from the description contained in the reference whether the axis of the motor (12) for driving the chamber (10) is coincident with the axis of the motor (17) for driving the shaft (11), since the first motor (12) drives the chamber (10) by means of a belt. The shaft driven motor (17) is an hydraulic motor. The motors used in Oberg, et al. however, are not permanent magnet-synchronous motors as now recited in applicant's new claims 14-16. In addition, further in contrast to applicant's invention as now claimed (see claims. 14 and 16), the motors described by Oberg, et al. are not placed, in the same casing, at the same end of the machine, with the driven shafts push-fitted in their respective rotors. Thus the claimed invention is distinguishable over Oberg et al.

The Cyphelly U.S. '241 patent discloses a centrifuge wherein the axes of the drive motors (5, 9) are coincident, with the motors both being placed at the same end of the centrifuge. Both motors (5, 9) are hydraulic motors. In contrast to applicant's invention, however, as presently claimed, the motors described in the Cyphelly reference are not contained in a single casing and further, they are not permanent magnet synchronous motors. In addition, the drive shafts are not push-fitted into their respective rotors. The presently claimed invention is thus additionally distinguishable over Cyphelly USP 3,923,241.

Jaeger U.S. Patent No. 4,120,447 describes a centrifuge wherein the drive motors (12, 13) are coincident and are placed at the same end of the centrifuge. The motors chosen for use by the patentee may be either two hydraulic motors or an hydraulic motor and an electric motor. Applicant's claimed invention is distinguishable over the disclosure of the Jaeger '477 reference, however, in that the present claims recite that the first and second motors are both permanent magnet synchronous motors, whereas the motors in Jaeger '447 are not permanent magnet synchronous motors. In addition, in the claimed invention, both

motors are contained in a single casing, whereas in Jaeger both motors are not contained in such a single casing. In this regard, moreover, it is important to note that the casing (1) of Jaeger, encasing both the centrifuge and motors, can not be compared to the casing (50) of the motors of the claimed invention. That is to say, casing (1) of Jaeger can not be considered a motor casing. Therefore, applicant's claims are also distinguishable over Jaeger.

Turning now to the Weder '372 patent, Weder discloses a centrifuge driven by an arrangement of two hydraulic motors (I, II), the axes of which are not coincident (see, e.g, Figure 5 of Weder). The two hydraulic motors of Weder are placed at the same end of the centrifuge. The invention is distinguishable over Weder in that, in Weder, the motors are not contained in a single casing. In addition, further in contrast to applicant's invention as now claimed, the driven shafts in Weder are not coincident. Thus, the present invention as now claimed distinguishes over Weder as well.

With regard to German Reference 3325566 A1, the subject reference describes a device for driving centrifuges. The motor (or motors) is/are of the permanently excited synchronous type. However, in contrast to applicant's invention, the motors are neither located at the same end of the machine, or within the same casing. The device disclosed by the reference is not particularly analogous to that of the presently claimed device due to the substantial differences there between. In particular, the subject German reference does not disclose, as in applicant's invention, a chamber and a shaft, each driven by a motor. That is, all of the elements of the centrifuge in the German reference are rotated simultaneously, eventually by two motors, although the reference contains no description or discussion which suggests to synchronize the two motors. The description of the invention contained within the reference is very vague, and applicants submit that it neither teaches nor discloses their invention as presently recited in claims 14-16.

Still further, applicant notes the Examiner's comment, found in several of the rejections under §102(b) to the effect that the manner in which the shafts are attached to the motors, i.e, by push-fitting, does not impart patentability to the claims under MPEP 2113. In response, applicant respectfully disagrees with the position taken by the Examiner that the mode of attachment recited in applicant's claims is a product-by-process feature. As described, the "push-fitting" feature clearly relates to the structure of the driven shafts and the motors, and not the process by which they are mounted. The specification, for example, teaches with regard to this feature of the invention that the shafts are "inserted" into their respective rotor (see p. 7, line 2 of the specification). Incidentally, such a structure as described in

applicant's specification is made possible through the use of the permanent magnet synchronous motors additionally recited in applicant's claims, which do not require driving shafts (see p. 9, last paragraph).

For the reasons set forth above, the Examiner is respectfully requested to reconsider and withdraw the anticipation rejections under 35 U.S.C. §102 (b) over Oberg et al., USP 4,369,915; Cyphelly USP 3,923,241; Jaeger USP 4,120,447; Weder USP 5,037,372; and German Reference No. 33 25 566 since, as indicated above, the invention as presently recited in applicant's new claims 14-16 is completely distinguishable from these references.

Discussion of Obviousness Rejections Under 35 U.S.C. §103(a)

The first obviousness rejection, i.e., of original claims 2, 6, 9 and 13, is based on the combination of the '915 Oberg et al. reference, discussed above, and USP 6,100,618 to Schoeb et al. Applicants new claims 14-16 are readily distinguishable over the '915 Oberg et al. reference for the reasons given above and those comments are incorporated by reference to this discussion. Turning to Schoeb et al. which is combined with Oberg et al. by the Examiner in formulating his rejection, applicant submits that Schoeb et al. relates to a bearing free pump, comprising a driven rotor and an electric motor with a stator and a rotor. The reference is deemed by applicant as being not pertinent to the presently claimed invention for the reasons which follow.

To begin with, Schoeb et al. does not describe the use of synchronous motors in the context of the invention described therein. The concept of a centrifuge in Schoeb et al. is very imprecisely disclosed. Notwithstanding, the motor described in Schoeb et al. is adapted to drive only a single rotating element. Neither Schoeb et al., nor the combination of Schoeb et al. with the Oberg et al. '915 U.S. Patent would suggest to one of ordinary skill in this art the implementation of two permanent-synchronous motors, in a single casing, with the driven shafts of the two rotating elements of a centrifuge push-fitted therein for driving the elements, as in the present invention. Incidentally, the single stator (4) of Schoeb et al. does enclose two rotors (2, 14); however, these rotors are a driven rotor (2) (a pump) and a driving rotor (14). The reference contains no disclosure which would link these rotors with the two driving rotors described in the claims of the present invention.

For the same reasons as given above, combining Schoeb et al with (a) the '241 Cyphelly patent (as relied upon by the Examiner to reject claims 2, 3, 6, 9 and 10); (b) the Jaeger '447 patent (combined by the

Examiner to reject applicant's claims 2, 3, 4, 9 and 10); or (c) the Weder '372 patent (used in rejecting applicant's claims 2, 3, 9 and 10), would neither teach nor suggest the present invention.

As presently claimed, applicant's invention provides numerous advantages over the devices disclosed in the prior art. For instance, the bending effect and frequency slips described in the Background of the Invention portion of the present application are overcome with the use of the present invention. Further, the installation of the motors within the same casing permits the rotary parts to be concentric (see the paragraph bridging pps. 6-7 of the specification), thus permitting the driving means to be more compact (see p. 9, line 28 of the specification). Further, the use of permanent magnet synchronous motors provides many advantages as described, for example at p. 9, lines 26-33. The use of the two driving motors thus provides a unique driving system, since the device comprises a unique casing, wherein the axial bulk of the machine is substantially reduced. Since the bending effects are overcome due to the claimed arrangement, the vibrations, as well as the constraints on the elements of the machine are reduced, thereby increasing the lifetime of the device and permitting the use of smaller-sized elements or components of the device and, therefore, correspondingly reducing the overall bulk of the machine. These surprising and unexpected advantages offered by the present invention provide further evidence of the non-obviousness of the claimed device.

The invention as recited in new claims 14-16 is believed to be distinguishable from the various combinations of references cited above to reject applicant's original claims. The Examiner is, therefore, respectfully requested to reconsider and withdraw the §103 'obviousness' rejections of the claims.

SUMMARY

For all of the reasons above, applicant's proposed new claims (nos. 14-16) are believed to completely distinguish the invention over all of the references cited to reject those claims which were originally filed. Applicant, further, acknowledges the statement by the Examiner in ¶18 of the Office Action that the prior art made of record and not relied on is considered pertinent to applicant's disclosure. Applicant submits in response, however, that none of the additional references cited on the form PTO-892 provided as an attachment to the Office Action concerning this application teach or even suggest the invention as presently claimed. The Examiner is respectfully requested to reconsider and withdraw all of the claim rejections set forth in the present Office Action so as to permit the present application to proceed to issuance.

If the Examiner believes that an interview would be useful in advancing the prosecution of this application, he is respectfully invited to contact applicant's representative at the telephone number below to arrange for such an interview.

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on November 8, 2005

Mark A. Farley

Name of applicant, assignee or
Registered Representative

Mark A. Farley

Signature

November 8, 2005

Date of Signature

Respectfully submitted,

Mark A. Farley

Mark A. Farley

Registration No.: 33,170

OSTROLENK, FABER, GERB & SOFFEN, LLP

1180 Avenue of the Americas

New York, New York 10036-8403

Telephone: (212) 382-0700

MAF:jl